

MAYS (T. J.)
With the compliments of the author.

AN

IMPROVED METHOD

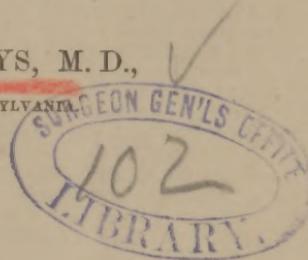
OF APPLYING

HEAT TO THE CHEST.

BY

THOMAS J. MAYS, M. D.,

UPPER LEHIGH, PENNSYLVANIA



(REPRINTED FROM THE NEW YORK MEDICAL JOURNAL, OCTOBER, 1879.)

NEW YORK :
D. APPLETON AND COMPANY,
549 & 551 BROADWAY.
1879.

INTERNATIONAL SCIENTIFIC SERIES.

NOW READY. In 12mo and bound in cloth.

- No. 1. **FORMS OF WATER**, in Clouds, Rain, Rivers, Ice, and Glaciers. By Prof. JOHN TYNDALL. \$1.50.
" 2. **PHYSICS AND POLITICS**; or, Thoughts on the Application of the Principles of "Natural Selection" and "Inheritance" to Political Society. By WALTER BAGEHOT. \$1.50.
" 3. **FOODS**. By EDWARD SMITH, M. D., LL. B., F. R. S. \$1.75.
" 4. **MIND AND BODY**. By ALEXANDER BAIN, LL. D. \$1.50.
" 5. **THE STUDY OF SOCIOLOGY**. By HERBERT SPENCER. \$1.50.
" 6. **THE NEW CHEMISTRY**. By Prof. JONAH P. COOKE, JR., of Harvard University. \$2.00.
" 7. **THE CONSERVATION OF ENERGY**. By Prof. BALFOUR STEWART, LL. D., F. R. S. \$1.50.
" 8. **ANIMAL LOCOMOTION**; or, Walking, Swimming, and Flying, with a Dissertation on Aeronautics. By J. BELL PEIGREW, M. D. Illustrated. \$1.75.
" 9. **RESPONSIBILITY IN MENTAL DISEASE**. By HENRY MAUDSLEY, M. D. \$1.50.
" 10. **THE SCIENCE OF LAW**. By Prof. SHELDON AMOS. \$1.75.
" 11. **ANIMAL MECHANISM**. A Treatise on Terrestrial and Aërial Locomotion. By E. J. MARCY. 117 Illustrations. \$1.75.
" 12. **THE HISTORY OF THE CONFLICT BETWEEN RELIGION AND SCIENCE**. By JOHN WILLIAM DRAPER, M. D., LL. D. \$1.75.
" 13. **THE DOCTRINE OF DESCENT, AND DARWINISM**. By Prof. OSCAR SCHMIDT, of Strasburg University. \$1.50.
" 14. **THE CHEMISTRY OF LIGHT AND PHOTOGRAPHY**. By Dr. HERMANN VOGEL. 100 Illustrations. \$2.00.
" 15. **FUNCI**; their Nature, Influence, and Uses. By M. C. COOKE, LL. D. Edited by M. J. BEECKLEY. 109 Illustrations. \$1.50.
" 16. **THE LIFE AND GROWTH OF LANGUAGE**. By Prof. W. D. WHITNEY, of Yale College. \$1.50.
" 17. **MONEY AND THE MECHANISM OF EXCHANGE**. By W. STANLEY JEVONS, M. A., F. R. S. \$1.75.
" 18. **THE NATURE OF LIGHT**, with an Account of Physical Optics. By Dr. EUGENE LOMMEL, Professor of Physics in the University of Erlangen. 88 Illustrations and a Plate of Spectra in Chromo-lithography. \$2.00.
" 19. **ANIMAL PARASITES AND MESSMATES**. By M. VAN BENEDEK, Professor of the University of Louvain. 83 Illustrations. \$1.50.
" 20. **ON FERMENTATIONS**. By P. SCHÜTZENBERGER, Director at the Chemical Laboratory at the Sorbonne. 28 Illustrations. \$1.50.
" 21. **THE FIVE SENSES OF MAN**. By JULIUS BERNSTEIN, O. Ö. Professor of Physiology in the University of Halle. 91 Illustrations. \$1.75.
" 22. **THE THEORY OF SOUND IN ITS RELATION TO MUSIC**. By Prof. PIETRO BLASERNA, of the Royal University of Rome. Numerous Woodcuts. \$1.50.
" 23. **STUDIES IN SPECTRUM ANALYSIS**. By J. NORMAN LOCKYER. Illustrations. \$2.50.
" 24. **A HISTORY OF THE GROWTH OF THE STEAM-ENGINE**. By ROBERT H. THURSTON, A. M., C. E., Professor of Mechanical Engineering. 163 Illustrations. \$2.50.
" 25. **EDUCATION AS A SCIENCE**. By ALEXANDER BAIN, LL. D., Professor of Logic in the University of Aberdeen. \$1.75.
" 26. **MODERN CHROMATICS**, with Applications to Art and Industry. By OGDEN N. ROOD, Professor of Physics in Columbia College. 180 original Illustrations. \$2.00.
" 27. **THE HUMAN SPECIES**. By A. DE QUATREFAGES, Professor of Anthropology in the Museum of Natural History, Paris. \$2.00.

The INTERNATIONAL SCIENTIFIC SERIES is entirely an American project, and was originated and organized by Dr. E. L. Youmans, who spent the greater part of a year in Europe, arranging with authors and publishers.

The character and scope of this series will be best indicated by a reference to the names and subjects included in the lists of volumes published and in preparation; from which it will be seen that the co-operation of the most distinguished professors in England, Germany, France, and the United States, has been secured.

The works will be issued simultaneously in New York, London, Paris, Leipzig, Milan, and St. Petersburg.

VOLUMES IN PREPARATION.

- The Brain as an Organ of Mind**. By H. CHAULTON BASTIAN, M. D. (*In press*)
The Crayfish: An Introduction to the Study of Zoölogy. By Prof. HUNLEY. (*In press*).
The Stars. By Prof. SCHICHT, late Director of the Observatory at Rome. (*In press*).
The Sun. By Prof. YOUNG, of Princeton College. With numerous Illustrations.
Psychometry. By FRANCIS GALTON, F. R. S.

- General Physiology of Muscles and Nerves**. By Prof. J. ROSENTHAL, of the University of Erlangen.
Animal Intelligence. By GEORGE J. ROMANES, F. L. S.
On Ants and Bees. By SIR JOHN LUBBOCK, Bart., F. R. S.
Forms of Life and other Cosmical Conditions. By P. BART, Professor of Physiology, Paris.

D. APPLETON & CO., Publishers, 549 & 551 Broadway, New York.

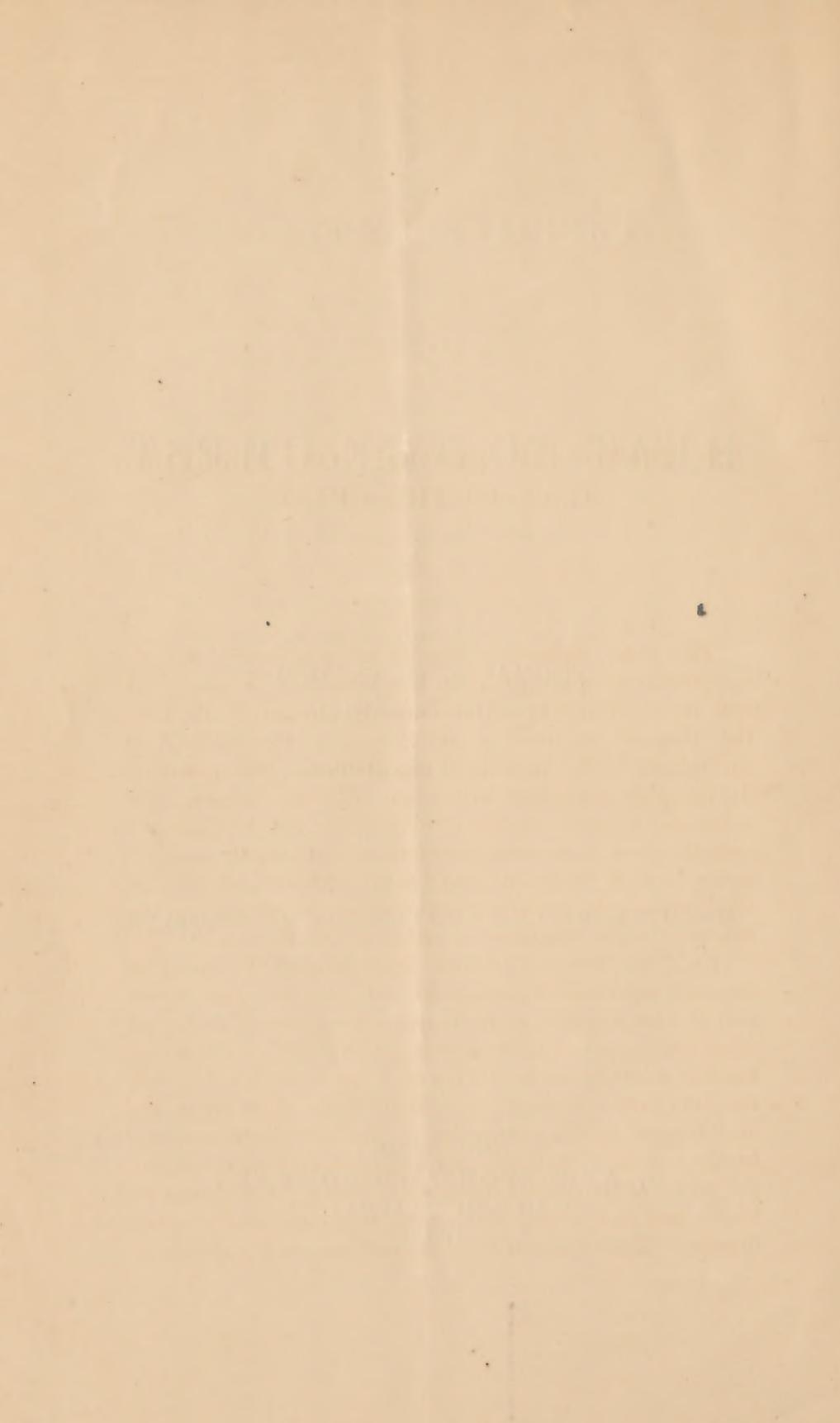
AN
IMPROVED METHOD
OF APPLYING
HEAT TO THE CHEST.

BY
THOMAS J. MAYS, M. D., ✓
UPPER LEHIGH, PENNSYLVANIA.

[REPRINTED FROM THE NEW YORK MEDICAL JOURNAL, OCTOBER, 1879.]

NEW YORK :
D. APPLETON AND COMPANY,
549 & 551 BROADWAY.
1879.





AN IMPROVED METHOD OF APPLYING HEAT TO THE CHEST.

THE great therapeutic value of hot applications was demonstrated long ago, and they now form such an important link in the treatment of inflammatory diseases of the chest that they are employed in one form or another, or in their equivalents, by the majority of practitioners. The impending danger often associated with many of these diseases, both acute and chronic, renders it imperative that we possess a remedy which is at once powerful and sufficiently counteractive in their treatment, and I can confidently say that, for this purpose, the external application of heat is one of the most serviceable and effectual agents at our command.

I will not enter at present into a detailed discussion of the *modus operandi* of heat on the body; but for a full expression of what I believe to be its true action, as well as that of other agents applied to the exterior of the body, I would beg leave to refer the reader to Chapter V. of my little work "On the Therapeutic Forces." All that I deem necessary to say on this point in this connection is that heat *accelerates molecular motion* of the body, and when properly regulated has the power of translating this mode of activity from disease to health, and in this way stamps out inflammation and other diseases. That an agent like heat possesses such a power be-

comes evident when we examine the principle which obtains in the progression and recession of inflammation. For "if inflammation is in a quiescent state, i. e., neither extends nor diminishes its area, it is positive evidence that there exists an equilibrium between health and disease; and if, from any incidental cause, the normal activity of the surrounding part is depressed, the balance between these two states becomes disturbed, and the disease consequently spreads. So, precisely on the contrary, if the molecular activity of the surrounding part is from any cause enhanced, the balance is likewise destroyed, and health extends its territory. Now, in heat we possess a therapeutic agent" wherewith we are able to enhance molecular activity in the surroundings of inflammatory action, and thus force the battle-line into those parts which were formerly held by disease, and by the continuation of such a process of *stimulation* we are not only able to prevent the spread of the disease, but also to eradicate it.

The medium which is generally employed for the purpose of applying heat to the body consists of a poultice, which is composed of one or more of the following substances mixed with water: linseed-meal, slippery elm, oatmeal, corn-meal, bread, starch, bran, potatoes, etc.

Now, the chief and essential points of utility in a poultice are :

First: *A capacity to retain a moderately hot and constant temperature.* A poultice should be of a moderate temperature, not too hot to be comfortable to the patient, nor too cool to be of benefit to him. A poultice made of any of the above substances has the power of retaining a sufficient amount of heat at the time of its application, but its heat rapidly dissipates, even after it is properly protected by oiled silk, etc.; and in an hour or an hour and a half it becomes too cool to be of any further service. Now, if my idea of the vacillating nature of the border-land between health and disease and that of the *modus operandi* of these external stimulants be the true one, then it follows that the more persistent the stimulation is the more effective will it be—the sooner will the battle-line be forced into those parts which were formerly under the dominion of disease. But with the poultice

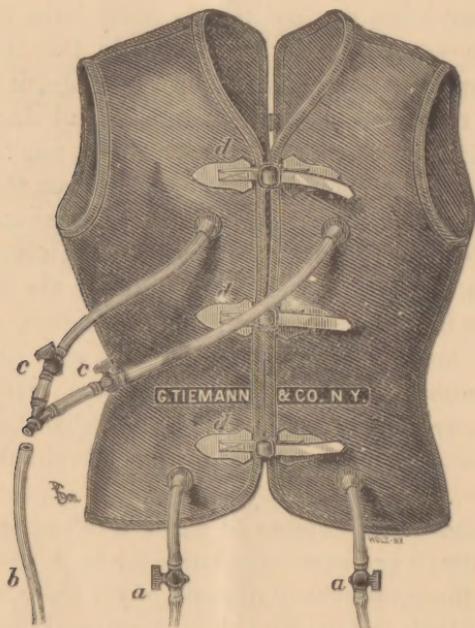
this is impracticable, for its stimulating power gradually diminishes until it reaches its minimum, when it must be exchanged for a hot one; and it is also obvious that during its replacement the process of stimulation is totally suspended, and consequently the reparative process is completely checked, which naturally weakens the forces on the side of health and allows those of disease to renew their strength and aggressiveness.

Second : *Sufficient extension to envelop not only the inflamed, but also the surrounding healthy parts.* This is readily secured when the poultice is made large enough, but as ordinarily made it also falls short in this requirement. As, for example, in many diseases of the lungs, it is very important that the apices should receive their full share of stimulation; yet it is very seldom that we find a poultice applied over the tops of the shoulders; and, even when this is undertaken, a great deal of time is exhausted in making and properly adjusting it, which of course entails a waste of its heat. Again, we have seen that it is necessary to stimulate the surrounding healthy parts in order to enhance their depressed, although as yet partially healthy, activity, and in this way compel their forces to encroach on the confines of disease. Hence, in any inflammatory trouble of the lungs, it is essential that the whole or at least the greater part of their surfaces should be enveloped.

Having had for a number of years a full appreciation of the great value of external stimulation by heat, in the form of poultices, in the treatment of diseases of the chest, as well as a knowledge of their defects and shortcomings, it seemed to me that an effort might be made to overcome these obstacles. Even that mode of "poulticing by steam" originated and devised by Dr. Horace Dobell, of London, England, as far back as 1874, does not, in my estimation, meet all the demands of a first-class poultice in inflammatory diseases of the chest. Here, in many instances, as I said before, it is of the utmost importance that the whole chest be invested, but his apparatus for the trunk of the body, also composed of rubber, simply consists of "a flat bag or cushion" which leaves a greater portion of the lateral and posterior surfaces of the lungs un-

protected, not to say anything of the exposed condition of the apices. Indeed, I can well understand how it is that the old-fashioned jacket linseed poultice is superior to such a mode of applying heat to inflammatory troubles in the chest, at least in many acute diseases.

Therefore, with the object of bringing to greater perfection this important auxiliary in the treatment of diseases of the lungs, I designed a rubber apparatus which is represented in the following cut, which has been manufactured by Messrs.



Tiemann & Co., of New York, to whom I am under many obligations for valuable suggestions received in regard to its construction.

The above figure represents the steam-jacket. *a*, stop-cocks and exhaust tubes; *b*, $\frac{3}{4}$ -inch caliber steam-tubing which conducts the steam from the boiler through feeding tubes *c*, to jacket; *d*, *d*, *d*, buckles and straps. The boiler is cylindrical, composed of tin, eight inches in diameter, six inches high, holds two gallons of water (two thirds of which quantity is

necessary only for steaming purposes), and fits the top opening of a range, cooking stove, or portable kerosene stove. Its top converges into a $\frac{3}{4}$ -inch tube, to which the rubber-tubing is attached.

It will at once be observed that this rubber steam-jacket strictly fulfills all the essential requirements of a strong and powerful, yet moderate external stimulant, and possesses the following prominent advantages over poultices and other appliances previously introduced to the profession: It envelops the whole chest completely. It is light and readily applied. It retains its position on the chest without difficulty. It is easily managed and operated. It is capable of maintaining a constant and uniform temperature. It requires no renewal; and patients, if strong enough, can sit up in a chair, or, if too weak, lie in bed while using it.

Before this jacket is applied, it is necessary, in order to protect the skin from any undue effects of heat, to envelop the whole chest with a vest composed of spongiopiline, or of several thicknesses of heavy flannel, which may be either wet or dry, according to the condition and indication of the patient.

From a limited experience in the use of this steam-jacket, I believe it to be a most valuable and important adjunct to the therapeutics of protracted and obstinate diseases of the lungs, such as interstitial pneumonia, chronic bronchitis, and even pulmonary consumption. Of its influence on the more acute inflammatory diseases of these organs, I am unable to say much from an experimental standpoint, not having had an opportunity of testing it thoroughly, but, judging from the efficacy of poultices and other similar applications in these diseases, I think it is reasonable to predict for it a like remedial effect.

HEALTH,

AND

HOW TO PROMOTE IT.

BY
RICHARD McSHERRY, M. D.,

PROFESSOR OF PRINCIPLES AND PRACTICE OF MEDICINE, UNIVERSITY OF MARYLAND; MEMBER OF AMERICAN MEDICAL ASSOCIATION; PRESIDENT OF BALTIMORE ACADEMY OF MEDICINE.

“L'aisance et les bonnes mœurs sont les meilleurs auxiliaires de l'hygiène.”—BOUCHARDAT,

Extract from Preface.

“Hygiene, public and private, has become, of late years, one of the most important elements of modern civilization. It is a subject in which all mankind has an interest, even if it be, as it too often is, an unconscious interest.

“The present work is addressed to the general reader, no matter what his pursuit, and the language is such as any physician may use in conversation with an intelligent patient; it is therefore as free as such a work can be made from scientific technicalities. It is intended to be rather suggestive than didactic, dealing rather in principles than in minute details; for the last must always be modified by existing conditions, which will vary more or less with every individual, or in every household.

“It is offered as a contribution to a great cause, and the writer trusts that it will have some influence in promoting the health, happiness, and welfare of all who may honor it with a careful perusal. The principles advocated have been, to a great extent, put in practice in the personal experience of the writer in various parts of the world, and under many vicissitudes, and he has found them to be not vague theories, but practical truths of the greatest importance.”

CONTENTS.

PART I.—INTRODUCTORY REMARKS.

Hygiene the Better Part of Medicine.—The Four Divisions of Human Life: The First Quarter, or the First Score of Years. The Young Man; the Young Woman. The Man; the Woman. The Declining or Old Man.

PART II.—HYGIENICS IN SOME DETAIL.

Race, Temperaments, and Idiosyncrasies.—Inheritance.—Habit.—Constitution.—The Air we breathe.—Sewers and Cesspools.—Ozone.—Malaria.—Animal Emanations.—Devitalized House-Air.—Water.—Clothing.—Exercise or Work.—Influence of Occupation upon Longevity.—Limit to Labor.—The Food of Man.—Accessory Food.—Manner of Eating.—Tea and Coffee.—Alcohol.—Use and Abuse.—Ardent Spirits.—Wines.—Malt-Liquors.—Tobacco.—Chewing and Smoking should be forbidden in School.—Report of Naval Surgeons.

One volume, 12mo. Cloth. 185 pages. Price, \$1.25.

For sale by all booksellers, or will be forwarded by mail, post-paid, on receipt of price

D. APPLETON & CO., Publishers,

549 & 551 BROADWAY, NEW YORK.

TO THE MEDICAL PROFESSION.

WE beg to call your attention to the merits of the NEW YORK MEDICAL JOURNAL. In doing so, we can say with confidence that this journal occupies a higher place in medical literature than any other monthly publication in this country, and that henceforth no effort will be spared to enhance its value, and render it indispensable to every practitioner who desires to keep up with the times. Trusting you will favor us with your support,

We are, yours truly,

D. APPLETON & CO.

The foremost American Monthly.

THE

NEW YORK MEDICAL JOURNAL,

Edited by JAMES B. HUNTER, M.D.,

Surgeon to the New York State Woman's Hospital; Consulting Surgeon to the New York Infirmary for Women and Children; Member of the New York Obstetrical Society, etc.

The leading features of this Journal are the following:

ORIGINAL COMMUNICATIONS FROM EMINENT MEMBERS OF THE PROFESSION.

REPORTS OF INTERESTING CASES IN PRIVATE PRACTICE.

NOTES OF PRACTICE IN METROPOLITAN HOSPITALS, ILLUSTRATING THE USE OF NEW METHODS AND NEW REMEDIES.

TRANSLATIONS AND EXTRACTS GIVING THE CREAM OF ALL THE FOREIGN JOURNALS.

REPORTS ON MEDICINE, SURGERY, OBSTETRICS, GYNECOLOGY, LARYNGOLOGY, PATHOLOGY, etc.

CRITICAL AND IMPARTIAL REVIEWS OF ALL NEW MEDICAL BOOKS.

PROCEEDINGS OF MEDICAL SOCIETIES.

COPIOUS ILLUSTRATIONS BY MEANS OF WOODCUTS.

THE LATEST GENERAL MEDICAL INTELLIGENCE.

A new volume of the NEW YORK MEDICAL JOURNAL begins with the numbers for January and July each year. Subscriptions received for any period.

Terms, \$4.00 per Annum, postage prepaid by the Publishers.

Trial Subscriptions will be received at the following rates: Three months, \$1.00; six months, \$2.00; specimen copy, 25 cents.

A General Index to the NEW YORK MEDICAL JOURNAL, from its first issue to June, 1876—including twenty-three volumes—now ready. Price, in cloth, 75 cents, post-paid. *Remittances, invariably in advance, should be made to*

D. APPLETON & CO., Publishers, 549 & 551 Broadway, N. Y.